R&D Scoping and Framing Workshop
R&D Roadmap: Managing Western Water as Climate Changes
February 20 and 21, 2008

Responsibilities, Challenges, and Needs
Perspectives of Reclamation Water Operations Managers

Note: The information presented herein is intended solely to facilitate a working level dialogue between the federal scientific community, and Reclamation water and environmental resource managers, on climate change research needs in support of Western water management. As such, "*this information has not been formally disseminated by the Bureau of Reclamation and should not be construed to represent any agency determination or policy*".[1]

Generally describe your region's water operations and planning responsibilities *(this is meant to be a high level summary of your world):*

Reclamation's Lower Colorado (LC) Region, on behalf of the Secretary of the Interior, is the water master for the lower Colorado River from Lake Mead to the Southern International Boundary with Mexico. In this role, the Secretary delivers Colorado River water in accordance with the "law of the river", a framework of Federal laws, a Supreme Court Decree, an interstate compact, water delivery contracts, operational guidelines, operating criteria, and an international treaty.

Reclamation's water operations responsibilities for the lower Colorado River encompass a broad range of activities, including developing the annual plan of operation (in conjunction with the Upper Colorado Region), developing monthly updates to the planned reservoir levels and releases, scheduling of the monthly water release from Hoover Dam and the daily water releases from Davis and Parker Dams, and the daily scheduling of water releases from Imperial Dam and the associated facilities in the Yuma area.. Additional responsibilities include administering water delivery contracts, maintaining a river telemetry system with real time data accessible to the water users for administering their water use, accounting for Colorado River water delivery on a real time as well as annual basis, and both short-term (4-8 week time horizon) and mid-term (1-2 year time horizon) hydrologic modeling to support decision-making.

Describe the primary types of decisions that your region makes associated with water and operations and planning that might be affected by climate change.

Nearly all of the operational decisions fall in the category of scheduling releases from reservoirs on the main stem of the river on a monthly and daily basis.

What are the primary scientific or non-scientific factors that typically govern these decisions?

Runoff forecasts into Lake Powell (and the associated release from Lake Powell) are the key determinant for water modeling and the annual water supply determination in the Lower Basin (i.e., of whether a normal, surplus, or shortage year exists). Annual water demands in the Lower Basin are also a key determinant of the amount of water released from Lower Basin storage each year. These operational inflow forecasts are derived from a variety of sources including the Colorado Basin River Forecast Center and forecasts derived by Reclamation personnel. The seasonal forecasts are primarily based on a 30-year historical period (1976 – 2005).

1/ Stated in accordance with Information Quality Act (Public Law 106-554), Final Information Quality Bulletin for Peer Review (Office of Management and Budget, December 16, 2004).

Investigations are ongoing with NOAA's Earth Science Research Lab to utilize experimental 6-10 day forecasts for the major tributaries in the LC Region.

Near-term forecasts of water demand (particularly irrigation demand) are currently "ad-hoc", using primarily 1-5 day weather forecasts.

Non-scientific factors include increasing demands due to changes in population, particularly in the Lower Basin, and the resulting transfers of water from agricultural to municipal use.

Who are the primary stakeholders affected by these decisions and summarize their primary concerns?

Lower Division States—ensure the delivery of their water apportionments

Water and Power Users—ensure delivery of the water or power resources that have been contracted to them, and provide some degree of reliability and certainty in order to properly plan to meet their customer's needs.

Environmental groups—ensure a healthy Colorado River ecosystem for endangered and threatened species including Mexico

Boaters and other recreators: provide adequate water surface area for continued boating, fishing, swimming, and other water based activities..

In general, list the top three wishes that you would like for scientific community to provide you, in support of your western water management responsibilities that are related to understanding and utilizing climate change information.

1. Improve the reliability of current hydrologic forecasts.

2. Research and development of 2–5 year time horizon probabilistic forecasts.

3. Investigate the potential impacts of climate change on near-term and mid-term forecasts and incorporate appropriate modifications to those forecasts

Are there current or emerging *"project-specific applications"* in your region where answers to these three wishes may be beneficial to you in the near-term?

Improving the accuracy of both short-term and mid-term water forecasting models is critical to on-going operations.

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